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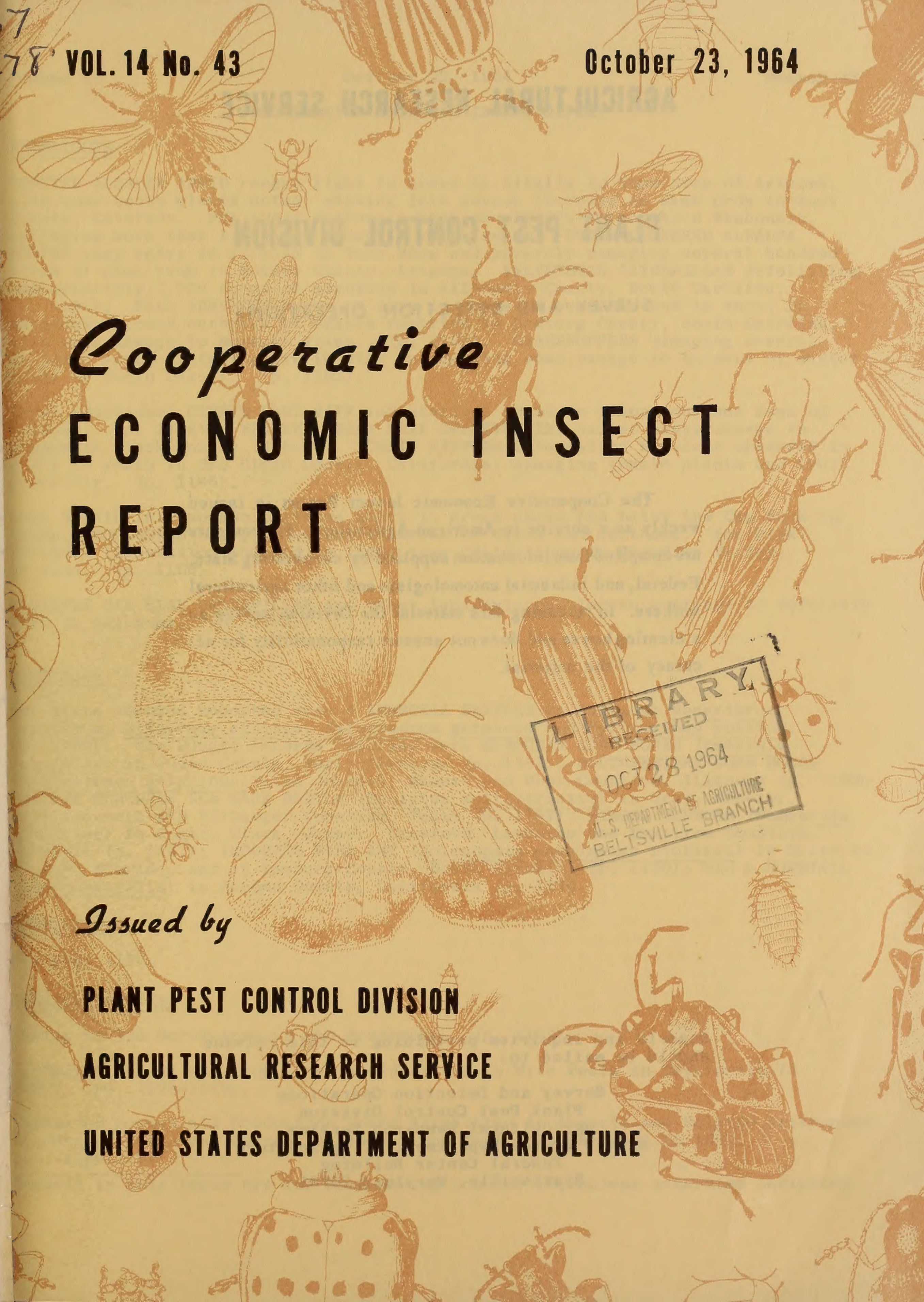

Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 14 October 23, 1964 Number 43

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

SPOTTED ALFALFA APHID ranged light to heavy in alfalfa in Yuma area of Arizona, with some sooty plants noted; showing late season increase on same crop in Mesa County, Colorado. PEA APHID extremely high on alfalfa in southern Wisconsin, averaging more than 1,000 per sweep in some fields. THREE-CORNERED ALFALFA HOPPER very heavy in alfalfa on Yuma Mesa and severely damaging several hundred acres of same crop in Mohave County, Arizona. VELVETBEAN CATERPILLAR defoliating approximately 2,000 acres of soybeans in Allendale County, South Carolina. (p. 1191). FALL ARMYWORM heavy on corn in areas of Nebraska and in wheat in Oklahoma; second outbreak of season reported in Bamberg County, South Carolina, with main damage to Bermuda grass. (p. 1162). GRASSHOPPERS damaging several thousand acres of fall grain in Utah and causing some damage to borders of winter wheat in South Dakota. (p. 1163).

Three additional CITRUS RUST MITE infestations found on lemons on Yuma Mesa of Arizona. (p. 1164). WESTERN GRAPE LEAF SKELETONIZER caused heavy damage to grapes in Clark County, Nevada. TOMATO PINWORM infestation heaviest observed in about 15 years in San Diego County, California; damaging tomato plants and fruit generally. (p. 1165).

BOLL WEEVIL late season buildups heavy in areas above and below the Cap Rock in Texas. BOLLWORMS heavy in cotton in areas of Texas and Oklahoma. New PINK BOLLWORM infestation located by light trap collections in Paradise Valley, Arizona. (p. 1166).

VARIABLE OAK LEAF CATERPILLAR and other lepidopterous larvae continue to defoliate oaks in Oklahoma. (p. 1167).

DETECTION

New State records reported were 4 AMBROSIA BEETLES in Indiana; *Monarthrum fasciatum*, *Xyleborus affinis*, *Xylosandrus germanus* and *Xyloterinus politus*. (p. 1167). New County records reported were EUROPEAN CORN BORER (*Ostrinia nubilalis*) in Jones County, North Carolina (p. 1162); SOUTHWESTERN CORN BORER (*Zeadiatraea grandiosella*) in Johnson, Massac and Pope Counties, Illinois (p. 1163); SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) in Gray, Wheeler, Collingsworth and Wilbarger Counties, Texas (p. 1167); MIMOSA WEBWORM (*Homadaula albizziae*) in Edgar, Clark, Jasper, Crawford, Lawrence and Hamilton Counties, Illinois (p. 1167); IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) in Sarasota County, Florida, and in Bamberg County, South Carolina (p. 1170); and a HORNTAIL (*Xeris tarsalis*) in Sonoma County, California (p. 1170

CORRECTIONS

See page 1170.

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 1172).

Estimated Damage and Crop Loss Caused by Insect/Mite Pests in California in 1963. (pp. 1173-1179).

Estimated Losses and Production Costs Attributed to Insects and Related Arthropods Attacking Pecans and Cotton in Alabama and Cotton in Oklahoma in 1963. (pp. 1180-1182).

Reports in this issue are for week ending October 16, unless otherwise indicated.

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-OCTOBER TO MID-NOVEMBER 1964

The Weather Bureau's 30-day outlook for mid-October to mid-November calls for temperatures to average above seasonal normals from the Plateau eastward to the Great Lakes and middle Mississippi Valley with greatest departures in the northern Plains and upper Mississippi Valley. Below normal temperatures are expected over the Atlantic Coast States and gulf coast region as well as in California. Near normal temperatures are anticipated in unspecified areas. Precipitation is expected to be subnormal over the northern half of the Nation from the Rockies eastward to the Atlantic coast and over the Tennessee Valley. Above normal amounts are called for over the Florida Peninsula as well as the southern Plains and California. Elsewhere near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING OCTOBER 19

Warm, sunny days and cool nights -- typical Indian summer -- prevailed from Idaho to the Atlantic coast during the first part of the week before a cold front dropped the temperatures sharply. The heaviest rains fell from Florida to the Carolinas.

TEMPERATURE: High pressure prevailed early in the week across the entire Nation. Afternoon temperatures in the 70's and 80's were common over the western and central sections of the country. Cutbank, Montana, registered 85° on Monday and Tuesday. Early morning temperatures were generally in the 40's and 50's. Maritime polar air moved into the Far Northwest about midweek, dropping the temperatures sharply as it moved southeastward. By Sunday morning numerous locations registered subfreezing temperatures. Minimums in the 20's and 30's were common over the western and northern Great Plains. Goodland, Kansas, registered 25° Sunday morning. Weekly temperatures averaged warmer than usual over California, Arizona, and from Montana to the Atlantic Ocean, and below normal over the Far Northwest, the southern Great Plains, and the Southeast.

PRECIPITATION: Light rains fell over the central Plains early in the week. More generous rains fell over the Southeast in connection with a storm centered over the Gulf of Mexico. Tallahassee, Florida, received 5.62 inches on Wednesday from this storm. Meanwhile, Hurricane Isbell brought moderate to heavy rains over southern Florida -- 1.69 inches at Miami on Wednesday. As Isbell moved northward, it produced rains along the Atlantic coast. Maritime polar air, moving into the Far Northwest brought light rains, generally less than 0.5 inch, to Washington, Oregon, and nearby States during the latter half of the week. Wide areas from California to the Great Lakes received no rain or only light showers. Parts of the States from Alabama to Virginia received more than 1 inch. Totals exceeded 6 inches at Tallahassee, Florida, and Columbia, South Carolina. Most of the area from Arizona across the southern Plains to Mississippi and west of the Appalachians received less than 0.5 inch. (Summary supplied by U.S. Weather Bureau).

CEREAL AND FORAGE INSECTS

SPOTTED ALFALFA APHID (Therioaphis maculata) - ILLINOIS - Ranged 50-140 (average 95) per 100 sweeps in alfalfa in southeast district; winged and wingless forms present. (Ill. Ins. Rpt.). WISCONSIN - Populations doubled since previous week; probably higher than sweep methods indicate as examination of individual stems showed many small nymphs behind leaf sheaths. Counts per sweep in 3 fields near Brodhead, Green County, on October 8 and 14 respectively, as follows: Field #1 - 300 and 700, field #2 - 200 and 400, field #3 - 100 and 100. Of these, 8 percent alates (2 percent males) at one location; 22 percent alates (4.5 percent males) at another location; and 28 percent alates (7 percent males) at third location. Examination of alfalfa stems in most heavily infested field showed 23 eggs on 50 stems examined. Surveys underway to determine extent of dispersion. Windrows appear to be influential factor in local dispersions. (Wis. Ins. Sur.). SOUTH DAKOTA - Sexual forms noted in Union County October 12; numbers very low, ranging 1-2 percent of population. (Hintz). NEBRASKA - Averaged 12 per 10 sweeps in Sarpy County alfalfa. (Bergman). OKLAHOMA - Light infestation of 10-60 per 10 sweeps noted in alfalfa in Caddo and Carter Counties; moderate (180 per 10 sweeps) in Jackson County. (Okla. Coop. Sur.). COLORADO - Showing late season increase on alfalfa in Mesa County; ranged 600-700 per 100 sweeps. (Bulla). ARIZONA - Ranged light to heavy in alfalfa in Yuma area; some sooty plants noted. (Ariz. Coop. Sur.). NEVADA - Occasional specimen collected in Panaca but none noted in Hiko, Lincoln County. (Bechtel, Lauderdale, Zoller).

PEA APHID (Acyrthosiphon pisum) - WISCONSIN - Extremely high in alfalfa in southern counties; averaged more than 1,000 per sweep in some fields and ranged 80-500 per sweep in many fields. Some plants show wilted effect. Males very common, oviparae appearing. Eggs averaged 1 per 30 stems examined in one field checked. (Wis. Ins. Sur.). ILLINOIS - Ranged 0-170 (average 43) per 100 sweeps in southeast district alfalfa. (Ill. Ins. Rpt.). NEBRASKA - Averaged 62 per 10 sweeps in Sarpy County alfalfa. (Bergman). UTAH - Numerous in short, succulent alfalfa in northern part of State generally. (Knowlton). NEVADA - Averaged 5 per sweep in alfalfa in Panaca and ranged 50-75 per sweep in Hiko, Lincoln County. (Bechtel, Lauderdale, Zoller). WASHINGTON - Averaged 1 per stem on seed alfalfa 6 inches high and ranged 30-50 on mature stands of forage at Walla Walla, Walla Walla County. (Halfhill).

LYGUS BUGS (Lygus spp.) - ARIZONA - Declining on alfalfa in Graham County. Ranged 20-150 per 100 sweeps in Yuma County; low on Yuma Mesa. (Ariz. Coop. Sur.). COLORADO - Counts remain high in alfalfa in Mesa County; ranged 200-300 per 100 sweeps. (Bulla). WYOMING - Adults averaged 12 per 100 sweeps in Washakie County alfalfa. (Marks).

PLANT BUGS - WYOMING - Adults of Adelphocoris lineolatus (alfalfa plant bug) averaged 10 per 100 sweeps in alfalfa in Washakie County. (Marks). NEBRASKA - Lygus lineolaris (tarnished plant bug) averaged 7 per 10 sweeps in Sarpy County alfalfa. (Bergman).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Very heavy on Yuma Mesa; 4,000 per 100 sweeps. Very heavy population at Bullhead City, Mohave County, causing severe injury to several hundred acres of alfalfa. (Ariz. Coop. Sur.). OKLAHOMA - Light (5-7 per 10 sweeps) in alfalfa in Caddo, Jackson and Carter Counties. (Okla. Coop. Sur.).

POTATO LEAFHOPPER (Empoasca fabae) - WISCONSIN - Adults and nymphs noted in some fields of alfalfa. (Wis. Ins. Sur.).

VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) - SOUTH CAROLINA - Defoliating approximately 2,000 acres of soybeans in Allendale County; some complete defoliation noted. (Nettles et al., Oct. 14).

ALFALFA CATERPILLAR (*Colias eurytheme*) - ARIZONA - Counts increased slightly in Yuma County alfalfa. (Ariz. Coop. Sur.). WASHINGTON - Averaged 1 larva per stem on 6-inch high seed alfalfa and mature forage alfalfa at Walla Walla, Walla Walla County. (Halfhill). MIGHIGAN - Adults of this species, *Pieris rapae* (imported cabbageworm) and *Colias philodice* (clouded sulphur) continue to fly in sizeable numbers in southern part of State. (Newman).

GARDEN WEBWORM (*Loxostege similalis*) - ARIZONA - Averaged 5 per 100 sweeps in alfalfa on Yuma Mesa. (Ariz. Coop. Sur.).

GREEN CLOVERWORM (*Plathypena scabra*) - MICHIGAN - Adults continue to emerge in southern tier of counties. (Newman).

CLOVER ROOT CURCULIO (*Sitona hispidula*) - WISCONSIN - Adults common in many fields of alfalfa; averaged approximately 1 per sweep in some fields. Mating occurring. (Wis. Ins. Sur.).

ALFALFA WEEVIL (*Hypera postica*) - COLORADO - Scattered adults collected on alfalfa in Larimer County. Few adults of *Bathyplectes curculionis* (a parasitic ichneumon) also being taken. (Simpson) WYOMING - Averaged 8 adults per 100 sweeps in alfalfa in Washakie County. (Marks). ILLINOIS - None found in alfalfa in southeast district. (Ill. Ins. Rpt.).

CORN ROOTWORMS (*Diabrotica* spp.) - NEBRASKA - Adults of *D. virgifera* (western corn rootworm) and *D. undecimpunctata howardi* (southern corn rootworm) ranged 2-5 per sweep in some alfalfa in Sarpy and Lancaster Counties and in south central area. *D. virgifera* adults frequently found in corn in south central counties and in Sarpy County. (Bergman). ILLINOIS - *D. undecimpunctata howardi* adults varied 10-110 (average 60) per 100 sweeps in alfalfa in southeast district. (Ill. Ins. Rpt.).

A SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata tenella*) - NEW MEXICO - Adults ranged 1-3 per 25 sweeps in alfalfa in Dona Ana County. (N.M. Coop. Rpt.).

A FLEA BEETLE (*Systena taeniata*) - CALIFORNIA - Adults medium on alfalfa in Hanford, Kings County. (Cal. Coop. Rpt.).

FALL ARMYWORM (*Laphygma frugiperda*) - NEBRASKA - Larvae heavy in stalks and ears of corn in Thayer, Nuckolls and Webster Counties; approximately 3-4 larvae per plant causing noticeable feeding signs. Most infested corn of poor quality. (Bergman). OKLAHOMA - Heavy infestation of 8 per linear foot noted in wheat in Osage County. Moderate in alfalfa in Bryan County and ranged 3-4 per 10 sweeps (light) in alfalfa in Caddo and Jackson Counties. (Okla. Coop. Sur.). SOUTH CAROLINA - Second outbreak of season reported in Bamberg County; main damage occurred to Coastal Bermuda grass. Controls giving excellent results. (Nettles et al., Oct. 14).

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - NORTH CAROLINA - Tunnels noted in 24 percent of stalks in 10 fields of corn examined in Jones and Duplin Counties. Jones County is a new county record. (Mount). ALABAMA - Extremely high infestations noted in late fields and roasting-ear patches of corn in Morgan County; 2-4 larvae per stalk not uncommon. Infestation ranged 90-100 percent in many late garden plantings for roasting ears; yields 50-90 percent reduced. Larvae also noted in corn in Cullman, St. Clair, Blount, Jefferson and Shelby Counties. (Henderson, Rutledge et al.). Caused considerable lodging of corn in Madison County. (Buttram). ILLINOIS - Comparison of 36 counties surveyed in 1963 and 1964 showed average of 106 borers per 100 plants in 1963 compared with 95 in 1964; State average for all counties surveyed in 1964 is 100 borers per 100 plants. Large buildup of borers occurred in extreme southern part of State this year due to a third generation. Highest count in State was 329 borers per 100 plants in Pulaski and Alexander Counties. Disease and parasitism appear very low. (Ill. Ins. Rpt.). WISCONSIN - Survey showed State average of 13 borers per 100 corn plants, considerably lower than average of 21 per 100 plants in 1963. (Wis. Ins. Sur.). MICHIGAN - Approximately one-third of larval injury observed in field noted in ears. (Newman).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - ILLINOIS - Found for first time in Johnson, Massac and Pope Counties. None found in White, Saline, Gallatin or Hardin Counties. (Ill. Ins. Rpt.). ARKANSAS - Percent lodged cornstalks per acre, by district, as follows: Northwest 1.7, north central 1.1, northeast 10.0 and east central 13.9. State average is 8.5 percent. Number of lodged cornstalks per acre, by district, as follows: Northwest 165, north central 106, northeast 528 and east central 1,077. State average is 588 lodged stalks per acre. An unusual condition exists in northwest and north central areas this year, in that late-planted corn is not heavily infested as is general Statewide, but is heavily infested in northeast and east central areas. (Ark. Ins. Sur.).

SOUTHERN CORNSTALK BORER (Diatraea crambidoides) - ALABAMA - Infestation extremely high in late fields of corn and in patches for roasting ears in Morgan County; 1-3 larvae per stalk not uncommon. Many late garden plantings for roasting ears 90-100 percent infested. (Henderson, Rutledge, et al.).

CORN EARWORM (Heliothis zea) - MICHIGAN - Field surveys in Barry, Calhoun, Eaton and Jackson Counties on October 14 showed 75 percent of larvae in late field corn killed by recent frosts. (Newman). NORTH DAKOTA - Few larvae taken from ears of popcorn at Fargo, Cass County. This is one of infrequent appearances of species in area. (Frye). CALIFORNIA - Larvae of this species and Spodoptera exigua (beet armyworm) medium on corn plantings in Arvin, Kern County. (Cal. Coop. Rpt.).

SORGHUM WEBWORM (Celama sorghiella) - ALABAMA - Rather heavy population damaged 10-acre field of late sorghum in Houston County. (White).

GRASSHOPPERS - UTAH - Damaging several thousand acres of fall grain in Box Elder County west of Brigham City-Tremonton area; controls underway on range and farms in Blue Creek, Howell and Snowville areas. (Thornley, Knowlton). SOUTH DAKOTA - Causing some damage to borders of winter wheat in Campbell, Walworth, Potter, Sully, Hughes, Lyman, Gregory and Tripp Counties. (Burge). NORTH DAKOTA - Egg survey in western third of State closely followed results of adult survey; most infestations light to moderate. Less than 1 percent of egg pods destroyed or infested with parasites and predators. Less than 1 percent desiccated in northern counties; 10 percent desiccated in southern counties. (Brandvik). WISCONSIN - Mating and egg laying by Melanoplus femurrubrum (red-legged grasshopper) continue. (Wis. Ins. Sur.).

A LEAF MINER (Liriomyza munda) - CALIFORNIA - Heavily damaged milo plantings in Rio Linda, Sacramento County. (Cal. Coop. Rpt.).

A PSYCHID MOTH (Apterona crenulella) - UTAH - Damaged bitterbrush (Purshia tridentata) in several areas of Morgan County. (Knowlton, Harrison).

A BILLBUG (Sphenophorus sp.) - ALABAMA - Destroyed approximately 3 acres of a 40-acre pasture of Bahia grass near Uriah, Monroe County. (Lemons).

A THRIPS (Chirothrips sp.) - ARIZONA - Necessitated controls on some fields of Bermuda grass in Yuma area. (Ariz. Coop. Sur.).

SPIDER MITES (Tetranychus spp.) - TEXAS - Heavy locally in Rusk County and damaging improved Bermuda grass pastures. (Burton).

TERMITES - TEXAS - Unspecified species damaging range grasses in local areas of Cooke County. (Tibbets).

FRUIT INSECTS

ORIENTAL FRUIT MOTH (Grapholitha molesta) - MARYLAND - Larvae infested ripe peaches at Fairland, Montgomery County. (U. Md., Ent. Dept.). COLORADO - Few larvae found in some late, undeveloped peach fruits in Mesa County; very few found during regular harvest period. (Bulla).

YELLOW-NECKED CATERPILLAR (Datana ministra) - CALIFORNIA - Larvae, probably this species, locally heavy on apple foliage in San Leandro, Alameda County. (Cal. Coop. Rpt.).

LESSER PEACH TREE BORER (Synanthedon pictipes) - MICHIGAN - Some pupation noted in Oceana County peach orchards. (Howitt).

GREEN PEACH APHID (Myzus persicae) - WASHINGTON - Wingless forms developing on peach in Yakima, Yakima County; no eggs found. (Powell, Oct. 9). COLORADO - Fall migrant movement nearly complete in Mesa County peach orchards; numerous colonies of egg-laying forms present, some turning reddish color at present. Colonies of egg-laying forms numerous in orchards with bindweed; moderate in clean-cultivated orchards. Fall controls recommended October 20-November 1. (Bulla).

WOOLLY APPLE APHID (Eriosoma lanigerum) - COLORADO - More abundant in apple orchards on Western Slope in various counties; probably due to reduced number of sprays and less effective materials. (Bulla).

ITALIAN PEAR SCALE (Epidiaspis piricola) - CALIFORNIA - Heavy on pear nursery stock locally in Saratoga, Santa Clara County. (Cal. Coop. Rpt.).

PEAR LEAF BLISTER MITE (Eriophyes pyri) - UTAH - Severe on apple foliage in home orchard at Smithfield, Cache County. (Knowlton).

HICKORY SHUCKWORM (Laspeyresia caryana) - ALABAMA - Larvae noted as rather heavy in pecans in Mobile and Baldwin Counties. These larvae will apparently overwinter in pecan shucks. (Eden).

WALNUT CATERPILLAR (Datana integerrima) - TEXAS - Locally heavy and damaging to pecans in Bosque County. (Texas Coop. Rpt., Meisch).

WALNUT HUSK FLY (Rhagoletis completa) - CALIFORNIA - Larvae heavy in yard trees in Livermore, Alameda County; locally heavy in Fresno, Fresno County. Dooryard trees particularly damaged this season in many northern localities. Heavy on late peach fruit locally in San Jose, Santa Clara County. (Cal. Coop. Rpt.). UTAH - Infesting walnuts at Brigham City, Box Elder County, and at Ogden, Weber County. (Knowlton, Wadley).

ORANGE-DOG (Papilio cresphontes) - ARIZONA - Continues present in Yuma area, Yuma County; adults still active. (Ariz. Coop. Sur.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Decrease in populations very evident in Yuma County. (Ariz. Coop. Sur.).

WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus) - CALIFORNIA - Invaded nursery cans of young citrus trees and girdled plants in Fremont, Alameda County. (Cal. Coop. Rpt.).

CITRUS RUST MITE (Phyllocoptruta oleivora) - ARIZONA - Three additional infestations found on lemons on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.). FLORIDA - Moderate and general on 100 percent of many nursery plants of sweet orange at Avon Park, Highlands County. (Keen, Snell, Oct. 9).

A PINK CITRUS RUST MITE (Aculus pelekassi) - FLORIDA - General and moderate on 100 percent of many citrus trees in nursery at Avon Park, Highlands County, (Keen, Snell, Oct. 9) and general and moderate on 90 percent of 2,300 nursery plants of sweet orange at Sorrento, Lake County, (Bentley, Oct. 7).

CITRUS FLAT MITE (Brevipalpus lewisi) - ARIZONA - Continues present on tangerines in Yuma County; some treatments applied. (Ariz. Coop. Sur.).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - NEVADA - Larvae still present on grapes in Las Vegas and North Las Vegas, Clark County; damage heavy. (Zoller).

TRUCK CROP INSECTS

CABBAGE LOOPER (Trichoplusia ni) - MARYLAND - All stages noted on cabbage at Fairland, Montgomery County. Injury has been severe. (U. Md., Ent. Dept.). FLORIDA - Caused very light damage to 3 percent of celery in commercial planting at Sanford, Seminole County. (Desin, Oct. 13). NEW MEXICO - Mostly spotted, light infestations in Dona Ana County lettuce fields. (N.M. Coop. Rpt.). ARIZONA - Treatments continue on Yuma area, Yuma County, truck crops; all stages easily found. (Ariz. Coop. Sur.).

DIAMONDBACK MOTH (Plutella maculipennis) - MARYLAND - Larvae noted on cabbage at Fairland, Montgomery County. (U. Md., Ent. Dept.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Treatments continue on truck crops in Yuma County. (Ariz. Coop. Sur.).

TOMATO PINWORM (Keiferia lycopersicella) - CALIFORNIA - Severely damaging tomato plants and fruit generally in San Diego County; this is heaviest infestation noted in about 15 years. (Cal. Coop. Rpt.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - ALABAMA - Late but extremely high "hatchout" observed on snap beans and cowpeas planted in conjunction with late corn in Morgan, Cullman and Blount Counties; some pupation still underway, although light frost occurred. Adult hibernation occurring in soil around bases of corn plants. (Henderson et al.).

CUCUMBER BEETLES (Diabrotica spp.) - ARIZONA - Feeding on sugar beets for seed in Dome area, Yuma County. (Ariz. Coop. Sur.).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Winged forms moving to isolated peach trees in potato-growing area of Weld County near Greeley. Wingless sexual forms appearing on peach; no eggs observed. (Simpson).

MELON APHID (Aphis gossypii) - ARIZONA - Heavy on newly developing heads of Yuma County lettuce. (Ariz. Coop. Sur.).

HARLEQUIN BUG (Murgantia histrionica) - ALABAMA - Numerous adult populations noted feeding on collards and cabbage during past 16 days in gardens in western part of State. (Henderson et al.).

LEAF MINER FLIES (Liriomyza spp.) - FLORIDA - Caused very light damage to 16 percent of celery in commercial planting at Sanford, Seminole County. (Desin, Oct. 13).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - WASHINGTON - Averaged 19 percent in overwintering (orange colored) stage on sugar beets at Quincy, Grant County; 22,961 mites recovered on 300 beet leaves. (Powell, Oct. 9).

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Heavy, late season buildups occurring in Dickens, Hall, Garza, Motley and Kent Counties, below the Cap Rock in western area. Infestations also heavy in eastern Floyd and Crosby Counties above the Cap Rock. (Texas Coop. Rpt.). OKLAHOMA - Percent punctured squares 35 in Jackson County and 55 in Caddo County. Numerous adults found in cotton blooms in Carter County. (Okla. Coop. Sur.). ALABAMA - Large numbers of adults collected in gin trash in Macon County during surveys for Pectinophora gossypiella (pink bollworm). (Barwood et al.).

A WEEVIL (Anthonomus sp.) - ARIZONA - Population buildup continues in Pinal County; 5 per boll counted in one field. (Ariz. Coop. Sur.).

BOLLWORMS (Heliothis spp.) - OKLAHOMA - Heavy infestations of 22-28 percent reported in cotton in Caddo and Jackson Counties. (Okla. Coop. Sur.). TEXAS - Heavy infestations in cotton general in Motley, Hall, Dickens and Garza Counties. (Rummel). ARIZONA - Eggs and small larvae continue to be found in cotton in Pinal and Yuma Counties; some damage still evident. (Ariz. Coop. Sur.).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Lint cleaner inspections indicated many infested fields from Pima northwestward in Graham County. Infested fields located by field and gin trash inspections in Pinal County; 109 larvae taken from 3 lots of gin trash. Total of 307 moths taken in 2 light traps, making total of 1,144 moths taken in Maricopa County to October 16. New infestations located by light trap collection in Paradise Valley; 3 newly infested fields (2 in Mesa and 1 in Rainbow Valley) located by gin trash inspection; this makes total of 20 infested fields in Maricopa County to October 16. (Ariz. Coop. Sur.). NEW MEXICO - Light to moderate in green bolls in cotton fields near Anapra, Dona Ana County; infestation ranged 6-40 percent in green bolls in area. Small numbers of larvae also collected from gin trash in cotton gins between La Union and Las Cruces. (N.M. Coop. Rpt.). OKLAHOMA - Inspections of gin trash recovered 5 larvae from 101 bushels in McCurtain County, 3 larvae from 20 bushels in Comanche County and 225 larvae from 127 bushels of gin trash in Tillman County. (Okla. Coop. Sur.).

COTTON LEAF PERFORATOR (Bucculatrix thurberiella) - ARIZONA - Remains moderate to heavy in Yuma County cotton. (Ariz. Coop. Sur.).

SALT-MARSH CATERPILLAR (Estigmene acrea) - ARIZONA - Heavy migrations beginning in spotted areas in Yuma County. (Ariz. Coop. Sur.).

CELERY LEAF TIER (Udea rubigalis) - ARIZONA - Noted in cotton in Dome Valley, Yuma County. (Ariz. Coop. Sur.).

COTTON LEAFWORM (Alabama argillacea) - ALABAMA - Rather heavy population of larvae pupated in several cotton fields in Wilcox County during past 10 days. Has not moved into central section as yet; normally moves as far north as Jefferson County before killing frost ends migration. (Henderson et al.).

COTTON APHID (Aphis gossypii) - NEW MEXICO - Light to heavy, spotted infestations found in Dona Ana County cotton; honeydew a problem in several fields. (N.M. Coop. Rpt.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BARK BEETLES - TEXAS - Active infestations of Dendroctonus frontalis (southern pine beetle) located during September in Hardin, Jasper, Liberty, Orange, San Augustine and Tyler Counties. Activity continued decline throughout entire infestation area. Since June 1, total of 512 spot infestations located and controlled; 11,345 brood trees involved. Continued infestations of D. terebrans (black turpentine beetle) reported on National forests in Angelina, Houston, Jasper and

Trinity Counties. *Ips avulsus*, *I. grandicollis* and *I. calligraphus* caused no unusual damage. (Texas For. Pest Comm., Sept. Rpt.).

PINE NEEDLE SCALE (*Phenacaspis pinifoliae*) - COLORADO - Heavy on spruce in Colorado Springs, El Paso County. (Hantsbarger).

PINE WEBWORM (*Tetralopha robustella*) - FLORIDA - Infested several sand pine plants in nursery in Fort McCoy, Marion County. (Holder, Oct. 8).

VARIABLE OAK LEAF CATERPILLAR (*Heterocampa manteo*) - OKLAHOMA - Defoliating oaks in Garvin, Murray, Johnston, Marshall, Oklahoma, Lincoln, Ottawa, Washington, Osage and Coal Counties. Other lepidopterous larvae found on oaks in these areas include: *Anisota stigma* (spiny oakworm) in Oklahoma and Carter Counties; *Datana ministra* (yellow-necked caterpillar) in Oklahoma, Carter and Coal Counties; *Schizura unicornis* (unicorn caterpillar) in Oklahoma, Carter and Coal Counties; *Heterocampa astarte* (a notodontid moth) in Oklahoma, Garvin, Carter and Coal Counties; *Acronycta afflicata* (a noctuid moth) in Oklahoma County; and *Euclea delphinii* (a eucleid moth) in Coal and Murray Counties. (Okla. Coop. Sur.).

FALL WEBWORM (*Hyphantria cunea*) - NEW MEXICO - Light to heavy and defoliating poplar, fruitless mulberry and pecan trees in southern Dona Ana County; many poplar trees completely defoliated. (N.M. Coop. Rpt.). OKLAHOMA - Heavy on trees in Mayes County. (Okla. Coop. Sur.).

A SWALLOWTAIL BUTTERFLY (*Papilio rutulus*) - CALIFORNIA - Larvae medium on ash trees in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) - TEXAS - Surveys made in several north plains and northwest counties; present in Potter, Hutchinson, Gray, Wheeler, Collingsworth and Wilbarger Counties. Gray, Wheeler, Collingsworth and Wilbarger Counties new county records. (Texas Coop. Rpt., Berry, Meisch).

AMBROSIA BEETLES - INDIANA - Four species collected for first time in State during 1964. *Monarthrum fasciatum* taken from pin oak, *Xyleborus affinis* and *Xylosandrus germanus* from river birch, and *Xyloterinus politus* from silver and red maples in Dubois County; *Xyloterinus politus* also collected from silver and red maples in Tippecanoe County. All collections made by Dr. R. L. Giese. (Bram).

BLACK PECAN APHID (*Melanocallis caryaefoliae*) - MARYLAND - Oviparous females noted on hickory at Chevy Chase, Montgomery County. (U. Md., Ent. Dept.).

A LEAFHOPPER (*Alconeura unipuncta*) - CALIFORNIA - Adults heavy on sycamore trees in Highlands, San Bernardino County. (Cal. Coop. Rpt.).

AN OAK KERMES SCALE (*Kermes boguei*) - OKLAHOMA - Found on oak trees in Murray, Carter and Coal Counties. (Okla. Coop. Sur.).

MIMOSA WEBWORM (*Homadaula albizziae*) - ILLINOIS - Distribution survey revealed following new county records: Edgar, Clark, Jasper, Crawford, Lawrence and Hamilton. None found in Douglas, Coles, Cumberland and Effingham Counties. (Ill. Ins. Rpt., Oct. 9).

CABBAGE LOOPER (*Trichoplusia ni*) - CALIFORNIA - Medium on chrysanthemums in Encinitas, San Diego County. (Cal. Coop. Rpt.).

TOBACCO BUDWORM (*Heliothis virescens*) - CALIFORNIA - Larvae heavy on geranium nursery stock in Santa Clara, Santa Clara County. (Cal. Coop. Rpt.).

A PYRAUSTID MOTH (*Ambia* sp.) - FLORIDA - Larvae collected on leather hollyfern (*Polystichum adiantiforme*) at large fernery in Zellwood, Orange County; controls necessary. (VanPelt, Oct. 7).

A BRUSH-FOOTED BUTTERFLY (Agraulis vinillae) - CALIFORNIA - Larvae medium on passion-flower plants in San Martin, Santa Clara County. (Cal. Coop. Rpt.).

APHIDS - CALIFORNIA - Lachnus salignus heavy on willow in Ravendale, Lassen County. Macrosiphoniella sanborni (chrysanthemum aphid) heavy on chrysanthemum growing stock in Fresno, Fresno County. (Cal. Coop. Rpt.). UTAH - Eulachnus rileyi very numerous on yellow pines in Ogden city area, Weber County. (Fronk, Knowlton). Fall migrant flight of unspecified aphids very heavy throughout Cache Valley. Periphyllus lyropictus (Norway-maple aphid) making sidewalks sticky in areas about Logan, Cache County; Salt Lake City, Salt Lake County; and Ogden, Weber County. (Knowlton). WYOMING - Large populations found on ornamental junipers at Laramie, Albany County. (Fronk). FLORIDA - Aphis gossypii (cotton aphid) general on about 200 of 1,000 ixora (Ixora spp.) plants in nursery in Pompano Beach, Broward County. (Clinton, Oct. 9). MARYLAND - Unspecified species infesting weeping willow at Baltimore. (U. Md., Ent. Dept.).

A RHOPALID BUG (Niestrea sidae) - TEXAS - Large numbers noted on shrubs in local areas of Marion County. (Morris).

VIRGINIA-CREEPER LEAFHOPPER (Erythroneura ziczac) - UTAH - Discolored foliage of a number of Virginia-creepers in Logan-Wellsville area, Cache County, and at Price, Carbon County. (Knowlton).

COCCIDS - FLORIDA - Saissetia nigra (a soft scale) and Pinnaspis strachani (an armored scale) found on stems of 50 Snow Queen hibiscus plants at Cypress Gardens, Polk County. (Herrmann, Oct. 9). Asterolecanium bambusae and A. miliaris robustum (pit scales) infested 50 percent of plants inspected in nursery in Lakeland, Polk County. (Henderson, Oct. 6). ARIZONA - Icerya purchasi (cottony-cushion scale) very heavy on pittosporum shrubs in Kingman area, Mohave County. (Ariz. Coop. Sur.). CALIFORNIA - Chionaspis ortholobis (an armored scale) heavy on Ceanothis prostratus on State forestry land in Nevada City, Nevada County. Asterolecanium minus (a pit scale) heavy on live oak trees on ranch in Barberville, Mendocino County. (Cal. Coop. Rpt.).

CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) - FLORIDA - General and severe on 50 percent of India-laurel fig (Ficus retusa) plants in 2 nurseries at Bradenton, Manatee County. (Buckner, Sept. 23 and Oct. 8).

LESSER BULB FLY (Eumerus tuberculatus) - CALIFORNIA - Larvae of this species and of Rhizoglyphus echinopus (bulb mite) heavy in daffodil bulbs in nursery in Chico, Butte County. (Cal. Coop. Rpt.).

ROSE-SLUG (Endelomyia aethiops) - UTAH - Severely defoliated roses at Hoytsville, Summit County; det. by B. D. Burks. (Knowlton).

A SPIDER MITE (Tetranychus neocaledonicus) - FLORIDA - Moderate to severe and generally distributed among plants of croton (Codiaeum sp.) in retail store at Mount Dora, Lake County. (Bentley, Oct. 8).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - NORTH CAROLINA - Aedes sollicitans (salt-marsh mosquito) and Anopheles bradleyi present along coastal areas but not numerous. (Ashton). TEXAS - General level in September considerably in excess of that in August. South Park area of Beaumont becoming "trouble" area. Number of Culex salinarius in Pleasure Island area of Jefferson County indicates possibility of troublesome winter. Locally this species quite active at temperatures well below those suitable for efficient use of insecticides. (Jefferson Co. Mosq. Contr. Dist., Sept. Rpt.). UTAH - Causing some annoyance to Cache Valley residents, in Corinne-Bear River area of Box Elder County and west of Salt Lake City, Salt Lake County. (Knowlton).

HOUSE FLY (Musca domestica) - OKLAHOMA - Moderate in homes and barns in Cleveland County. (Okla. Coop. Sur.). NORTH DAKOTA - Unusually abundant at cattle sale ring; up to 75 per square yard. (Frye).

HORN FLY (Haematobia irritans) - OKLAHOMA - Moderate on cattle in Bryan, Mayes, Cleveland and Hughes Counties. Averaged 35 per head on calves in Marshall County and 50 per head on horses in Bryan County. (Okla. Coop. Sur.). NORTH DAKOTA - Occasionally 100 per side on darker animals; appearing on warmer days. (Frye).

LONG-NOSED CATTLE LOUSE (Linognathus vituli) - NORTH DAKOTA - Ranged up to 4 per hair part on calves. (Frye).

BLACK WIDOW SPIDER (Latrodectus mactans) - UTAH - Observed about a number of homes in Logan, Salt Lake City, Ogden and other northern and central communities recently. (Knowlton).

A BROWN SPIDER (Loxosceles reclusa) - OKLAHOMA - Being found in many homes and other buildings in Greer County. (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

BOXELDER BUG (Leptocoris trivittatus) - WISCONSIN - Adults numerous and a nuisance in many areas. (Wis. Ins. Sur.). UTAH - Numerous on, about and entering 2 homes at Smithfield, Cache County. (Knowlton).

A BAT BUG (Cimex pilosellus) - COLORADO - Very noticeable infestation reported in home in Loveland, Larimer County. (Daniels).

STINK BUGS - OKLAHOMA - Invading homes in Pryor, Mayes County. (Okla. Coop. Sur.).

BALD-FACED HORNET (Vespula maculata) - UTAH - This and Vespa spp. numerous on and about home at Smithfield, Cache County. (Knowlton).

LARGER YELLOW ANT (Acanthomyops interjectus) - MARYLAND - Winged forms swarmed at house foundation at Avondale, Prince Georges County. (U. Md., Ent. Dept.).

SOUTHERN LYCTUS BEETLE (Lyctus planicollis) - UTAH - Damaged hardwood floors in home at Providence, Cache County; det. by E. J. Gergerg. (Knowlton).

FURNITURE CARPET BEETLE (Anthrenus flavipes) - MARYLAND - Noted in home at Suitland, Prince Georges County, October 10. (U. Md., Ent. Dept.).

STORED-PRODUCT INSECTS

Stored-Grain Insects in Texas - Heavy infestations of CADELLE (Tenebroides mauritanicus), CIGARETTE BEETLE (Lasioderma serricorne), RED FLOUR BEETLE (Tribolium castaneum) and larvae of a PHYCITID MOTH (Cadra sp., probably C. cautella) reported in commercial nut-packing establishment in Dallas County. (Texas Coop. Rpt., Meisch).

BENEFICIAL INSECTS

DAMSEL BUGS (Nabis spp.) - WYOMING - Adults averaged 12 per 100 sweeps in alfalfa fields of Washakie County. (Marks).

FLOWER BUGS (Orius spp.) - WYOMING - Adults averaged 28 per 100 sweeps in alfalfa fields of Washakie County. (Marks).

BRACONID WASPS - ALABAMA - Numerous Ceratomia catalpae (catalpa sphinx) noted parasitized by these wasps in Mobile County; also parasitizing lesser numbers of Sibine stimulea (saddleback caterpillar). (Seibels, Robinson). WASHINGTON - Aphidius spp. ranged 3-10 per stem on both forage and seed alfalfa 6 inches high in Walla Walla area, Walla Walla County. (Halfhill, Oct. 9).

MISCELLANEOUS INSECTS

DERMESTID BEETLES - UTAH - Trogoderma simplex conspicuous in nests of leafcutting bees (Megachilidae) at Flowell, Millard County. Det. by J. M. Kingsolver. One Attagenus sp. also present. (Knowlton, Barnes).

PUMPKIN CATERPILLAR (Diaphania indica) - FLORIDA - Adult taken in Steiner trap at Lake Placid, Highlands County. (Morris, Oct. 8).

CICADAS (Tibicen spp.) - ALABAMA - Outbreak in Mobile County during week ending September 18 mainly T. chloromera and T. davisi. Det. by R. D. Froeschner. (Seibels et al.).

A BACKSWIMMER (Notonecta kirbyi) - CALIFORNIA - Medium in swimming pool in Walnut Creek, Contra Costa County. Backswimmers have been problem in swimming pools in great many areas this season. (Cal. Coop. Rpt.).

RING-LEGGED EARWIG (Euborellia annulipes) - NEW MEXICO - Specimen found in rug in home at University Park, Dona Ana County. (N.M. Coop. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - Collected for the first time in Sarasota County, FLORIDA, and in Bamberg County, SOUTH CAROLINA. (PPC, South. Reg., Sept. Rpt.).

A HORNTAIL (Xeris tarsalis) - CALIFORNIA - Light infestation noted in wood in Santa Rosa, Sonoma County. This is a new county record. (Cal. Coop. Rpt.).

WASPS - ALABAMA - Numerous and large, newly formed groups of Polistes spp. observed throughout State; congregating on old nests prior to migrating to suitable hibernation locations. (Watters et al.).

CORRECTIONS

CEIR 14(11):179 - Stored-Product Insects in Alabama - First line: Sitophilus granarium should read Sitophilus granarius.

LIGHT TRAP COLLECTIONS

	Temperature F.	Precipitation	Type of trap *	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	Heliothis zea (bollworm, corn earworm)	Laphygma frugiperda (fall armyworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Protoparce quinquemaculata (tomato hornworm)	Protoparce sexta (tobacco hornworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Trichoplusia ni (cabbage looper)	Major crop **
FLORIDA																								
Gainesville 10/13			BL	2					4		1	9					1	2			18			
GEORGIA																								
Tifton 10/1-7	43-89		BL							1	73								0	0				
MISSISSIPPI																								
Stoneville 10/10-16	35-77	0.56"	MV	1					30	2	75	1						1			41	60	19	
Stoneville 10/10-16	35-77	0.56"	BL	10					29	1	113	16					1	3			27	70	14	
MISSOURI																								
Portageville 10/3-16				11						1	521					38	2				76			
NORTH DAKOTA																								
Fargo 10/10-16				2							4										6			
SOUTH CAROLINA																								
Clemson 10/3-9			BL	3							14	91						15			31			
TEXAS																								
Brownsville 10/7-14			4BL	569			2		156	0	1554	2683		5010			36	67	14	8	562		600	
Waco 10/10-16			BL	5			1		25	1	39	66					0	4			12	12	0	
WISCONSIN																								
Platteville 10/4-14			BL	0							6						0				2			
Mazomanie 10/6-11			BL	17							3						0				10			
Madison 10/8-15			BL	0							0						0				0			
Middleton 10/8-15			BL	10							4						1				3			

* BL = blacklight; I = incandescent; MV = mercury vapor ; O = other

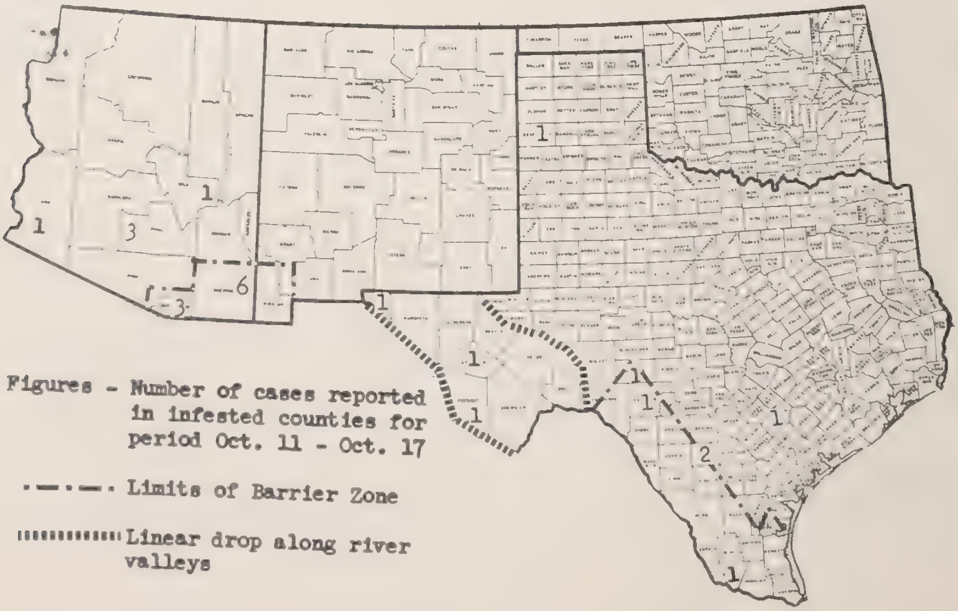
** alf. = alfalfa; beet = garden beet and/or sugar beet; cole = cole crops (crucifers); cott. = cotton; FC = field corn; grain = small grains; leg. = legumes (unspecified); lett. = lettuce; pean. = peanut; pepp. = pepper; pot. = potatoes; SC = sweet corn; sol. = solanaceous plants (unspecified); soy. = soybean; TC = truck crops (unspecified or mixed); tob. = tobacco; tom. = tomato.

STATUS OF THE SCREW-WORM (*Cochliomyia hominivorax*) IN THE SOUTHWEST

During the period October 11 - 17, TEXAS reported 10 screw-worm cases from 9 counties: El Paso (1), Jeff Davis (1), Presidio (1), Edwards (1), Frio (2), Starr (1), Gonzales (1), Sutton (1) and Deaf Smith (1). Case from Deaf Smith County being investigated; believed to have originated in New Mexico. ARIZONA reported 14 screw-worm cases from 5 counties: Cochise (6), Santa Cruz (3), Pinal (3), Gila (1) and Yuma (1). No cases reported from NEW MEXICO. Republic of Mexico reported 269 cases: Veracruz (1), San Luis Potosi (1), Neuvo Leon (12), Chihuahua (96), Sonora (87), Puebla (1), Durango (21), Tamaulipas (29) and Coahuila (11). Sterile screw-worm flies released: Texas 18,989,450, New Mexico 1,560,000, Arizona 6,400,000 and Mexico 62,740,000.

	Postive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding weeks in 1962 and 1963 in Southwestern Eradication Area.						
1962	2,151	43,588	75	2,573	2,868.0	1,964.05
1963	411	4,895	234	5,722	175.6	85.5
1964	10	129	110	4,987	4.9	2.4
Table 2. Comparison of specimens reported during corresponding weeks and in a corresponding area in 1963 in the United States-Mexico Barrier Zone.*						
1963	313	4,522	46	1,175	680.4	384.85
1964	249	3,165	57	1,639	436.8	193.1
Table 2A. Mexican portion of Barrier Zone only.						
1963	105	1,391	3	155	3,500.0	897.4
1964	235	2,995	24	745	979.16	402.01

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm population in the United States. (Anim. Dis. Erad. Div.).



Figures - Number of cases reported in infested counties for period Oct. 11 - Oct. 17

-·—·—· Limits of Barrier Zone

IIIIIIIIIII Linear drop along river valleys

STATE OF CALIFORNIA
DEPARTMENT OF AGRICULTURE
SACRAMENTO

September 25, 1964

COPY E-82-6

TO: All County Agricultural Commissioners

SUBJECT: Estimated Damage and Crop Loss Caused by Insect/Mite Pests - 1963

This report of estimated damage and dollar crop loss attributed to insect/mite pests is a summarization of special reports submitted by the County Agricultural Commissioners and other available information. Preparation of this information involves a great deal of work by each County, and yet this data must of necessity be considered an estimate only, as the final crop return information is not available at the required time of preparation. The majority of the county reports were complete, giving estimated crop value, percentage loss caused by insects and treatment costs on many of the 250 different kinds of commercial crops grown in the State on 131,000 farms. Acreages treated for Agricultural Pest Control amounted to 8,486,852 acres in 1963. Repeat application would be considered as separate applications and increase the total acreage by the number of acres treated. There was an increase of 1,276,310 acres treated in 1963. Ground applications decreased by 47,462 acres while aircraft application increased 549,327 acres. Aircraft application accounted for 80.4 percent and ground 19.6 percent of treatments applied. Field crops accounted for 5,292,309 acres treated, vegetables 1,456,993 acres, and fruits and other crops 1,737,550 acres. There are 1,482 licensed pest control operators in California, 509 airplane pilots and 250 apprentice pilots. Weather conditions during 1963 varied from normal patterns and many species of insect/mites developed severe pest populations relatively rapidly.

Tallying of related pests comprising more than one species as a group was more prevalent this year in field reports than has formerly been done. However, when damage/loss is attributed to a single species it is so credited. For a more accurate representation of state-wide losses, the maximum-minimum value is given rather than striking an average.

Estimates in the pests of animals continue to be partially incomplete due to lack of centralized reporting, consequently they represent only a limited number of counties. Forest pests are included through cooperation with the U.S. Forest Service. In the case of Structural Pest Control reports, estimated dollar costs for individual structural pests are impossible to completely assess because treatment for combination of insect pests, rodents and wood rots is a general practice in the industry.

The attached table represents the breakdown of assigned damage/loss dollar value.

/s/ Ronald M. Hawthorne

Ronald M. Hawthrone
Economic Entomologist

Robert W. Harper, Chief
Bureau of Entomology

Attach.

CROP LOSS ESTIMATE REPORT FOR CALIFORNIA - 1963

Insects	Assessable Yield Loss ($)	Control Cost ($)	% Loss of Crop Value	Estimated Overall Loss ($)
Mites (nonspecific)	20,044,136	9,509,911	.022-10	29,554,047
Citrus red mite (*Panonychus citri*)	5,315,640	2,552,115	1-6	7,867,755
Clover mite (*Bryobia praetiosa*)	103,000	98,000	5	201,000
European red mite (*Panonychus ulmi*)	869,000	880,000	.5-5	1,749,000
Pacific spider mite (*Tetranychus pacificus*)	2,017,000	304,600	4-4.5	2,321,600
Pear leaf blister mite (*Eriophyes pyri*)	23,000	68,000	.25-6	91,000
Tomato russet mite (*Aculus lycopersici*)	---	75,000	.3	75,000
Two-spotted spider mite (*Tetranychus telarius*)	3,021,650	1,493,100	.1-10	4,514,745
A spider mite (*Eotetranychus willamettei*)	52,000	42,900	1-4.5	94,900
Mites All - Total	31,445,426	15,023,626		46,469,052
European earwig (*Forficula auricularia*)	2,000	1,300	1-10	3,300
Field crickets (*Gryllus* spp.)	2,000,000	1,000,000	3	3,000,000
Grasshoppers	80,750	31,280	.5-3	112,030
Thrips (nonspecific)	5,111,697	1,396,200	.055-7	6,507,897
Citrus thrips (*Scirtothrips citri*)	1,295,040	671,474	1-2.6	1,966,514
Pear thrips (*Taeniothrips inconsequens*)	20,000	50,000	.2	70,000
Thrips All - Total	6,426,737	2,117,674		8,544,411
Leafhoppers (nonspecific)	5,887,600	3,819,470	.052-5.5	9,707,070
Beet leafhopper (*Circulifer tenellus*)	183,000	95,000	1.4-5	278,000
Grape leafhoppers (*Erythroneura* spp.)	1,836,895	1,041,669	1.56-5	2,878,564
Leafhoppers All - Total	7,907,495	4,956,139		12,863,634
Mealybugs (nonspecific)	100,900	45,300	.007-5.4	146,200
Citrus mealybug (*Pseudococcus citri*)	2,650,000	125,000	.5	2,775,000
Mealybugs All - Total	2,750,900	170,300		2,921,200
Pear psylla (*Psylla pyricola*)	966,482	463,000	1-39	1,429,482
Whiteflies	28,400	5,000	10	33,400

Insects	Assessable Yield Loss ($)	Control Cost ($)	% Loss of Crop Value	Estimated Overall Loss ($)
Lygus bugs (*Lygus* spp.)	16,697,714	6,882,312	.021-13.4	23,580,026
Stink bugs	4,687,520	1,964,125	.01-9	6,651,645
Aphids (nonspecific)	12,084,136	7,929,320	.9-20	20,013,456
Apple aphid (*Aphis pomi*)	5,000	26,500	.1-2	31,500
Apple grain aphid (*Rhopalosiphum fitchii*)	209,550	54,625	1-6	264,175
Cabbage aphid (*Brevicoryne brassicae*)	504,000	542,900	.2-7	1,046,900
Green peach aphid (*Myzus persicae*)	2,911,190	2,857,710	.1-7	5,768,900
Lettuce root aphid (*Pemphigus bursarius*)	100,900	20,000	5	120,900
Mealy plum aphid (*Hyalopterus pruni*)	6,000	4,814	2	10,814
Melon aphid (*Aphis gossypii*)	225,500	22,000	1-2	247,500
Pea aphid (*Acyrthosiphon pisum*)	1,775,000	575,000	1.2	2,350,000
Rosy apple aphid (*Anuraphis rosea*)	140,000	190,000	2-2.1	330,000
Spotted alfalfa aphid (*Therioaphis maculata*)	359,910	100,660	.92-5	460,570
Walnut aphid (*Chromaphis juglandicola*)	350,340	239,900	1-10	590,240
Aphids All - Total	18,671,526	12,563,429		31,234,955
Scales (nonspecific)	245,040	915,528	1.09-11.5	1,160,568
Black scale (*Saissetia oleae*)	2,809,000	939,700	.5-5	3,748,700
California red scale (*Aonidiella aurantii*)	720,500	854,287	1.2-3	1,574,787
European fruit lecanium (*Lecanium corni*)	10,000	100,000	.2	110,000
Greedy scale (*Aspidiotus camelliae*)	2,750	6,000	1.	8,750
Olive scale (*Parlatoria oleae*)	1,262,238	1,018,792	.070-3.5	2,281,030
San Jose scale (*Aspidiotus perniciosus*)	2,112,954	1,216,376	.02-5	3,329,330
Yellow scale (*Aonidiella citrina*)	277,040	1,039,780	1	1,316,820
Scales All - Total	7,439,522	6,090,463		13,529,985
A vinegar fly (*Drosophila melanogaster*)	310,000	25,000	5-2	335,000
Walnut husk fly (*Rhagoletis completa*)	165,000	110,000	3-10	275,000
Alfalfa looper (*Autographa californica*)	326,500	500,600	1-5.4	827,100
Armyworm (*Pseudaletia unipuncta*)	4,621,741	1,142,530	.020-5	5,764,271
Artichoke plume moth (*Platyptilia carduidactyla*)	317,190	246,810	5-40	564,000
Beet armyworm (*Spodoptera exigua*)	1,600,000	1,600,000	2.5-4	3,200,000
Black cutworm (*Agrotis ipsilon*)	100,000	90,000	---	190,000
Cabbage looper (*Trichoplusia ni*)	2,892,000	2,881,000	3-11	5,773,000

Insects	Assessable Yield Loss ($)	Control Cost ($)	% Loss of Crop Value	Estimated Overall Loss ($)
Codling moth (*Carpocapsa pomonella*)	1,208,123	2,218,832	3-12	3,426,955
Corn earworm (*Heliothis zea*)	22,460,807	9,443,656	.015-17.6	31,904,463
Cutworms	4,055,653	1,429,110	.1-3.6	5,484,763
Imported cabbageworm (*Pieris rapae*)	43,000	60,000	1	103,000
Navel orangeworm (*Paramyelois transitella*)	169,000	26,000	2-3.5	195,000
Orange tortrix (*Argyrotaenia citrana*)	1,037,000	315,000	2-5	1,352,000
Oriental fruit moth (*Grapholitha molesta*)	712,673	1,242,620	.099-3	1,955,293
Peach twig borer (*Anarsia lineatella*)	1,420,522	2,922,774	.073-5.71	4,343,296
Potato tuberworm (*Gnorimoschema operculella*)	983,446	645,650	2.86-5.8	1,629,096
Red-humped caterpillar (*Schizura concinna*)	13,250	10,900	5	24,150
Salt-marsh caterpillar (*Estigmene acrea*)	154,000	143,000	4	297,000
Sunflower moth (*Homoeosoma electellum*)	1,012	1,200	5	2,212
Tobacco hornworm (*Protoparce sexta*)	117,055	40,400	2-7	157,455
Western peach tree borer (*Sanninoidea exitiosa graefi*)	126,270	196,000	2.1-3	322,270
Western yellow-striped armyworm (*Prodenia praefica*)	616,600	483,333	---	1,099,933
Alfalfa weevil (*Hypera postica*)	150,000	115,250	1.6-6	265,250
Cucumber beetles (*Diabrotica* spp.)	45,000	36,000	2-1	81,000
A ground beetle (*Harpalus pennsylvanicus*)	140,325	55,000	.5	195,325
Elm leaf beetle (*Galerucella xanthomelaena*)	---	25,000	5	25,000
Grain storage insects	353,000	110,000	1-1.5	463,000
Tobacco flea beetle (*Epitrix hirtipennis*)	61,000	68,000	.05	129,000
Saw-toothed grain beetle (*Oryzaephilus surinamensis*)	500	1,500	1	2,000
Shot-hole borer (*Scolytus rugulosus*)	911,400	225,000	2-10	1,136,400
Striped flea beetle (*Phyllotreta striolata*)	3,500,000	1,250,000	5	4,750,000
Wireworms	12,000	6,100	.1-2	18,100

Insects	Assessable Yield Loss ($)	Control Costs ($)	% Loss of Crop Value	Estimated Overall Loss ($)
Cabbage maggot (Hylemya brassicae)	554,600	125,000	1-10	679,600
Onion maggot (Hylemya antiqua)	6,500	4,000	1	10,500
Leaf miners (nonspecific)	155,990	603,010	1	759,000
A rice leaf miner (Hydrellia griseola)	215,000	144,000	.1-1	359,000
A leaf miner (Liriomyza sp.)	40,000	80,000	.1	120,000
Leaf miners All - Total	410,990	827,010		1,238,000
Tadpole shrimp (Triops longicaudatus)	285,000	146,600	1-2	431,600
Agricultural Pests - Total	148,985,629	80,037,523		229,023,152
Pests of Animals				
Cattle lice (Haematopinus spp., Bovicola spp., Trichodectes spp., Linognathus spp.)	30,986	108,450	.22-10	139,436
Common cattle grub (Hypoderma lineatum)	1,375,317	706,000	.09-16	2,081,317
Horn fly (Haematobia irritans)	50,000	80,000	.05-.16	130,000
Horse flies (Tabanus spp.)	108,087	5,600	.07-2	113,687
Mosquitoes	---	150,000	2	150,000
Northern fowl mite (Ornithonyssus sylviarum)	---	708,000		708,000
Pests of Animals - Total	1,564,390	1,758,050		3,322,440
Agricultural & Animal Pests - Total	150,550,019	81,795,573		232,345,592
Forest Pests				Estimated Value of Stumpage Killed
Western pine beetle (Dendroctonus brevicomis)			.75	5,000,000
Mountain pine beetle (Dendroctonus monticolae)			1.00	4,800,000
Fir engraver (Scolytus ventralis)			1.40	3,800,000
Douglas-fir beetle (Dendroctonus pseudotsugae)			.10	1,700,000
Jeffrey pine beetle (Dendroctonus jeffreyi)			.50	1,000,000

Forest Pests	% Loss of Crop Value	Estimated Value of Stumpage Killed
California flatheaded borer (*Melanophila californica*)	.10	150,000
Flatheaded fir borer (*Melanophila drummondi*)	.10	125,000
California five-spined ips (*Ips confusus*)	.10	125,000
A pine engraver (*Ips oregonis*)	.10	100,000
Lodgepole needle miner (*Evagora milleri*)	(unknown)	---
Forest Pests - Total		16,800,000

STRUCTURAL PEST CONTROL

Structural pests are those referred to as household pests and wood destroying pests, or organisms, or such other pests as may include those which infest households or other structures including railroad cars, ships, docks and airplanes, or the contents thereof.

Due to the fact that geographical and climatic conditions vary over the entire State, pest problems differ enormously in various areas. However, the following list represents those pests on which the most calls are received from the general public.

From an economic standpoint, termites are again considered the most important. Termite inspection reports registered with the State of California during 1963 totalled 308,541, a 25 percent increase over 1962. Of this number, 24.88 percent or 77,089 disclosed no infestation of any kind. Of the remainder, infestations reported were as follows: 42.3 percent of all structures inspected had subterranean termite infestation; 31.9 percent were infested with *Kalotermes* termite; 1.91 percent were infested with beetle or other wood destroying insects; and .4 percent disclosed dampwood termite infestations. As in 1962, however, pest control operators received far more calls for cockroaches than for termites.

The following are the ten most important household pests which gave the homeowner, restaurant owner, industrialist and food processing plant owner the most trouble in 1963, listed in order of their importance:

COCKROACHES
- Oriental cockroach (*Blatta orientalis*)
- Brown-banded cockroach (*Supella supellectilium*)
- American cockroach (*Periplaneta americana*) and other species

TERMITES
- Subterranean termites (*Reticulitermes* spp.)
- Drywood termites (*Kalotermes* spp.)
- A dampwood termite (*Zootermopsis angusticollis*)
- A powder-post termite (*Cryptotermes brevis*)

ANTS
- Argentine ant (*Iridomyrmex humilis*)
- Southern fire ant (*Solenopsis xyloni*)
- Pavement ant, carpenter ants, thief ant, Pharoah ant and harvester ants

SPIDERS
- Black widow spider (*Latrodectus mactans*)
- Wolf and garden spiders

Household Pests (Continued)

STORAGE PESTS

Saw-tooth grain beetle
(*Oryzaephilis surinamensis*)

Drugstore beetle
(*Stegobium paniceum*)

Indian-meal moth
(*Plodia interpunctella*)

Mediterranean flour moth
(*Anagasta kühniella*)

Granary weevil
(*Sitophilus granarius*)

FLEAS AND BROWN DOG TICK

Cat flea
(*Ctenocephalides felis*)

Dog flea
(*Ctenocephalides canis*)

Brown dog tick
(*Rhipicephalus sanguineus*)

EARWIGS AND CRICKETS

CARPET BEETLES, MOTHS AND SILVERFISH

BEES AND WASPS

Honey bee
(*Apis mellifera*)

A carpenter bee
(*Xylocopa tabaniformis orpifex*)

Wasps
(*Polistes* spp.)

SOWBUGS, PILLBUGS, SCORPIONS, CENTIPEDES, CLOVER MITES, FUNGUS GNATS & DARKLING BEETLES

Structural Pests - Total - (Including loss by individuals due to damage to food, fiber and materials discarded)	$ 98,000,000
GRAND TOTAL - ALL PESTS	$ 347,145,592

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Alabama (Commodity) IN Pecans (State or District) DURING 1963 (Year)

A. Pest or pest complex: Black pecan aphid, yellow aphids, pecan nut casebearer, hickory shuckworm, pecan weevil and others.

B.	Number of trees[a] produced (From CRS)	No. 945,393
C.	Average yield per tree[a] (From CRS)	Units/ 55 lbs.
D.	Price[b] per unit (lb.)[c] (From CRS)	$/ 0.185
E.	Trees[a] needing control	No. 900,000
F.	Trees[a] treated	No. 103,000
G.	Reduction due to not treating where needed:	
H.	Loss in yield, percent	% 20
I.	Loss in yield, units per tree[a], C x H	Units/ 11 lbs.
J.	Loss in yield, $ per tree[a], D x I	$/ 2.04
K.	Loss in quality, $ per tree[a]	$/ 11.00
L.	Yield loss for all trees[a], (E-F) x I	Units 8,767,000 lbs.
M.	Control cost, $ per tree[a]	$/ 8.60
N.	Control cost for all trees[a], F x M	$ 885,800
O.	Yield loss for all trees[a], (E-F) x J	$ 1,625,880
P.	Quality loss for all trees[a], (E-F) x K	$ 8,767,000
Q.	Combined control cost and losses, N + O + P	$ 11,278,680
R.	Percent loss due to each insect in the complex:	See comment

Comment: Black pecan aphid 40 percent; yellow aphids 20 percent; pecan nut casebearer 20 percent; hickory shuckworm 15 percent; pecan weevil 4 percent; others 1 percent.

a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by H. Frank McQueen

Date May 8, 1964

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

IN Alabama (State or District) DURING 1963 (Year)

ATTACKING Cotton (lint) (Commodity or Crop)

A. Pest or pest complex: **Boll weevil, bollworm, tobacco budworm, spider mites and other species.**

B. Number of acres[a] produced (From CRS) No. 832,000

C. Average yield per acres[a] (From CRS) Units/ 508 lbs.

D. Price[b] per unit (pound)[c] (From CRS) $/ 0.329

E. Acres[a] needing control No. 650,000

F. Acres[a] treated No. 423,327

G. Reduction due to not treating where needed:

H. Loss in yield, percent % 10

I. Loss in yield, units per acre[a], C x H Units/ 50.8 lbs.

J. Loss in yield, $ per acre[a], D x I $/ 16.71

K. Loss in quality, $ per acre[a] $/ 0

L. Yield loss for all acres[a], (E-F) x I Units 11,514,988 lbs.

M. Control cost, $ per acre[a], $/ 6.40

N. Control cost for all acres[a], F x M $ 2,709,292.00

O. Yield loss for all acres[a], (E-F) x J $ 3,787,705.00

P. Quality loss for all acres[a], (E-F) x K $ -----

Q. Combined control cost and losses, N + O + P $ 6,496,997.00

R. Percent loss due to each insect in the complex: See comment

Comment: **Boll weevil 40 percent; bollworm 22 percent; tobacco budworm 23 percent; spider mites 12 percent; others 3 percent.**

a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by **H. Frank McQueen**

Date May 8, 1964

ATTACKING Cotton (seed) (Commodity or Crop)

A. Pest or pest complex: **Boll weevil, bollworm, tobacco budworm, spider mites and other species.**

B. Number of acres[a] produced (From CRS) No. 832,000

C. Average yield per acres[a] (From CRS) Units/ 0.43 ton

D. Price[b] per unit (ton)[c] (From CRS) $/ 46.75

E. Acres[a] needing control No. 650,000

F. Acres[a] treated No. 423,327

G. Reduction due to not treating where needed:

H. Loss in yield, percent % 10

I. Loss in yield, units per acre[a], C x H Units/ 0.43 ton

J. Loss in yield, $ per acre[a], D x I $/ 2.10

K. Loss in quality, $ per acre[a] $/ -----

L. Yield loss for all acres[a], (E-F) x I Units 9,746 tons

M. Control cost, $ per acre[a], $/ Charged to Lint -0-

N. Control cost for all acres[a], F x M $ Charged to Lint -0-

O. Yield loss for all acres[a], (E-F) x J $ 476,013.00

P. Quality loss for all acres[a], (E-F) x K $ -----

Q. Combined control cost and losses, N + O + P $ 476,013.00

R. Percent loss due to each insect in the complex: See comment

Comment: **Boll weevil 40 percent; bollworm 22 percent; tobacco budworm 23 percent; spider mites 12 percent; others 3 percent.**

a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by **H. Frank McQueen**

Date May 8, 1964

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Cotton (Commodity) IN Oklahoma (State or District) DURING 1963 (Year)

A. Pest or pest complex: Bollworms, boll weevil, fleahoppers, others.

B. Number of acres[a] produced (From CRS) No. 575,000

C. Average yield per acres[a] (From CRS) Units/ 267 lbs.

D. Price[b] per unit (lbs.)[c] (From CRS) $/ 0.299

E. Acres[a] needing control No. 385,250

F. Acres[a] treated No. 200,330

G. Reduction due to not treating where needed:

H. Loss in yield, percent % 42.4

I. Loss in yield, units per acre[a], C x H Units/ 113.20 lbs.

J. Loss in yield, $ per acre[a], D x I $/ 33.84

K. Loss in quality, $ per acre[a] $/ -----

L. Yield loss for all acres[a], (E-F) x I Units 20,932,944 lbs.

M. Control cost, $ per acre[a] $/ 13.45

N. Control cost for all acres[a], F x M $ 2,694,438

O. Yield loss for all acres[a], (E-F) x J $ 6,257,692

P. Quality loss for all acres[a], (E-F) x K $ -----

Q. Combined control cost and losses, N + O + P $ 8,952,130

R. Percent loss due to each insect in the complex: See comment

Comment: Bollworms 60 percent; boll weevil 20 percent; fleahoppers 10 percent; others 10 percent.

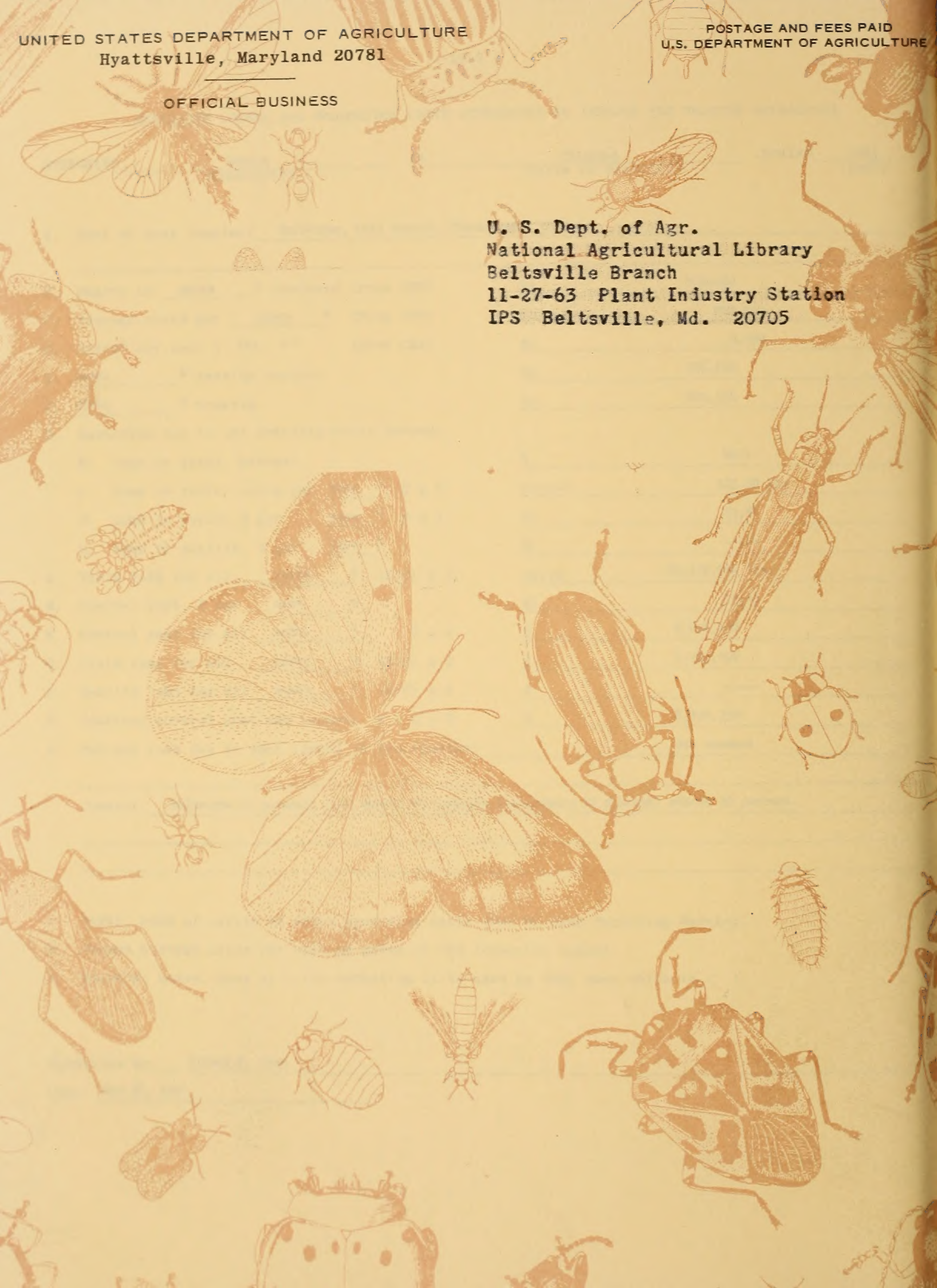
a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by Sidney E. Kunz

Date May 18, 1964



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